Claims:

1. A method for identifying a potential modulator of ribosomal protein L11/GAR activity, comprising the steps of:

a. using a three-dimensional structure of the L11/GAR complex as defined by atomic coordinates of the L11/GAR according to Table II;

b. employing said three-dimensional structure to design or select said potential modulator;

c. providing said potential modulator; and

d. contacting said potential modulator with L11/GAR to determine the ability of said potential modulator to modulate L11/GAR activity.

2. The method according to claim 1, wherein said potential modulator is designed de novo.

3. The method according to claim 1, wherein said potential modulator is designed from a known modulator.

4. The method according to claim 1, wherein said step of employing said three-dimensional structure to design or select said compound comprises the steps of:

a. identifying chemical entities or fragments capable of associating with said L11/GAR; and

b. assembling the identified chemical entities or fragments into a single molecule to provide the structure of said potential modulator.

5. The method according to claim 4, wherein said potential modulator is designed de novo.

6. The method according to claim 4, wherein said potential modulator is designed from a known modulator.

7. A method for screening L11/GAR-binding compounds comprising the steps of:

a. incubating in vitro one or more compounds, a known L11/GAR binding activity and labeled RNA comprising GAR RNA;

b. separating that fraction of said labeled RNA bound to said known L11/GAR binding activity from that fraction of said labeled RNA not bound to said known L11/GAR binding activity; and

c. detecting labeled RNA, wherein a decrease in the level of said labeled RNA bound to said known L11/GAR binding activity in the presence of said one or more compounds indicates the binding of said one or more compounds to L11/GAR.

8. A method for screening L11/GAR-binding compounds comprising the steps of:

a. incubating in vitro one or more compounds, a labeled known L11/GAR binding activity that binds to a site identified by the three dimensional structure of L11/GAR and an RNA comprising GAR RNA;

b. separating that fraction of said labeled known L11/GAR binding activity bound to said RNA from that fraction of said labeled known L11/GAR binding activity not bound to said RNA; and

c. detecting labeled known L11/GAR binding activity wherein a decrease in the level of said labeled known L11/GAR binding activity bound to said RNA in the presence of said one or more compounds indicates that said one or more compounds binds L11/GAR.

9. The method of either one of claims 7 or 8 wherein said known L11/GAR binding activity is an antibiotic.

10. The method of claim 9 wherein said antibiotic is thiostrepton.

11. The method of claim 10 wherein said antibiotic is micrococcin.

12. The method of claim 8 wherein said RNA comprising GAR RNA is contained within a ribosome.

13. A method for screening L11/GAR-binding compounds comprising the steps of:

a. incubating in vitro one or more compounds designed or selected by using a three-dimensional structure of the L11/GAR complex [capable of binding to a site identified

by the three dimensional structure of L11/GAR] with a translationally competent cell extract and a translatable RNA;

b. detecting translation, wherein a decrease in the level of translation indicates binding of said one or more compounds to L11/GAR.

14. A method for screening L11/GAR-binding compounds comprising the steps of:

a. incubating in vitro one or more compounds with a translationally competent cell extract and a translatable RNA;

b. detecting translation, wherein a decrease in the level of translation indicates binding of said one or more compounds to L11/GAR.

15. The method of claim 14 wherein said translatable RNA encodes an enzyme and wherein said step of detecting translation comprises detecting the activity of said enzyme.

16. The method of claim 15 wherein said enzyme is luciferase.

17. The method of claim 14 wherein said translatable RNA is poly-U, and said step of detecting translation detects the incorporation of labeled phenylalanine into polyphenylalanine.

18. A method for screening L11/GAR-binding compounds comprising the steps of:

a. incubating in vitro one or more compounds designed or selected by using a three-dimensional structure of the L11/GAR complex, isolated 70S ribosomes, isolated EF-G and gamma-labeled GTP;

b. detecting GTP hydrolysis wherein a decrease in GTP hydrolysis indicates said one or more compounds binds L11/GAR.

19. A method for screening L11/GAR-binding compounds comprising the steps of:

a. incubating in vitro one or more compounds, isolated 70S ribosomes, isolated EF-G and gamma-labeled GTP;

b. detecting GTP hydrolysis wherein a decrease in GTP hydrolysis indicates said one or more compounds binds L11/GAR.

20. A method for screening anti-bacterial compounds comprising the steps of:

a. incubating in vitro one or more compounds, a known L11/GAR binding activity and labeled RNA comprising GAR RNA;

b. separating that fraction of said labeled RNA bound to said known L11/GAR binding activity from that fraction of said labeled RNA not bound to said known L11/GAR binding activity; and

c. detecting labeled RNA, wherein a decrease in the level of said labeled RNA bound to said known L11/GAR binding activity in the presence of said one or more compounds indicates that one or more of said compounds has anti-bacterial properties.

21. A method for screening anti-bacterial compounds comprising the steps of:

a. incubating in vitro one or more compounds, a labeled known L11/GAR binding activity and an RNA comprising GAR RNA;

b. separating that fraction of said labeled known L11/GAR binding activity bound to said RNA from that fraction of said labeled known L11/GAR binding activity not bound to said RNA; and

c. detecting labeled known L11/GAR binding activity wherein a decrease in the level of said labeled known L11/GAR binding activity bound to said RNA in the presence of said one or more compounds indicates that said one or more compounds has anti-bacterial properties.

22. The method of either one of claims 20 or 21 wherein said known L11/GAR binding activity is an antibiotic.

23. The method of claim 22 wherein said antibiotic is thiostrepton.

24. The method of claim 22 wherein said antibiotic is micrococcin.

25. The method of claim 21 wherein said RNA comprising GAR RNA is contained within a ribosome.

26. A method for screening anti-bacterial compounds comprising the steps of:

a. incubating in vitro one or more compounds designed or selected by using a three-dimensional structure of the L11/GAR complex with a translationally competent cell extract and a translatable RNA;

b. detecting translation, wherein a decrease in the level of translation indicates said one or more compounds has anti-bacterial properties.

27. A method for screening anti-bacterial compounds comprising the steps of:

a. incubating in vitro one or more compounds with a translationally competent cell extract and a translatable RNA;

b. detecting translation, wherein a decrease in the level of translation indicates said one or more compounds has anti-bacterial properties.

28. The method of claim 27 wherein said translatable RNA encodes an enzyme and wherein said step of detecting translation comprises detecting the activity of said enzyme.

29. The method of claim 28 wherein said enzyme is luciferase.

30. The method of claim 27 wherein said translatable RNA is poly-U, and said step of detecting translation detects the incorporation of labeled phenylalanine into polyphenylalanine.

31. A method for screening anti-bacterial compounds comprising the steps of:

a. incubating in vitro one or more compounds designed or selected by using a three-dimensional structure of the L11/GAR, isolated bacterial ribosomes, isolated EF-G and gamma-labeled GTP;

b. detecting GTP hydrolysis wherein a decrease in GTP hydrolysis indicates said one or more compounds has anti-bacterial properties.

32. A method for screening anti-bacterial compounds comprising the steps of:

a. incubating in vitro one or more compounds, isolated bacterial ribosomes, isolated EF-G and gamma-labeled GTP;

b. detecting GTP hydrolysis wherein a decrease in GTP hydrolysis indicates said one or more compounds has anti-bacterial properties.